

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Reissue Application of : **Attn: BOX REISSUE**  
U.S. Patent No. 5,802,241 : **Atty. Docket No. 2000\_1727**  
Issued September 1, 1998 :  
Mitsuaki OSHIMA :  
Serial No. NEW :  
Filed December 20, 2000 :  
COMMUNICATION SYSTEM :  
(Reissue Divisional  
of Serial No. 09/653,482,  
Filed August 31, 2000)

**PRELIMINARY AMENDMENT**

Assistant Commissioner for Patents  
Washington, DC 20231

Sir:

Please amend the above-identified application as follows.

**IN THE SPECIFICATION:**

Page 1, after the title of the invention, insert the following paragraph:

--This is a reissue application of U.S. Patent No. 5,802,241, issued September 1, 1998, and a divisional application of reissue application No. 09/653,482, filed August 31, 2000, which is also a reissue application of U.S. Patent No. 5,802,241, issued September 1, 1998.--

**IN THE CLAIMS:**

Please cancel claims 1-5 without prejudice or disclaimer to the subject matter therein. Please add new claims 6-10 as follows.

--6. ✓ A signal transmission apparatus comprising:

a modulator operable to assign and interleave a data stream of a layer A and a data stream of a layer B to a respective constellation in a signal space to produce a modulated signal of the layer A and a modulated signal of the layer B;

an inverse fast Fourier transformer operable to convert the modulated signal of the layer A into a transmission signal on a time axis in the layer A and to convert the modulated signal of the layer B into a transmission signal on a time axis in the layer B, wherein each transmission signal comprises an effective symbol signal and a guard interval signal, and a period of the guard interval signal in the layer A is larger than the period of the guard interval signal in the layer B; and

a transmitter operable to transmit the transmission signals.

7. ✓ A signal receiving apparatus for use in receiving a modulation signal in a layer A and a modulation signal in a layer B, wherein the modulation signals each include a guard interval signal, said apparatus comprising:

a fast-Fourier transformer operable to convert the modulation signal in the layer A into a converted signal on a frequency axis in the layer A and to convert the modulation signal in the layer B into a converted signal on a frequency axis in the layer B; and

a demodulator operable to de-interleave the converted signals, demodulate the converted signal in the layer A into a data stream of the layer A and to demodulate the converted signal in the layer B into a data stream of the layer B;

wherein a period of the guard interval signal in the layer A is larger than a period of the guard interval signal in the layer B.

8. A signal transmission system comprising:

a signal transmission apparatus including

a modulator operable to assign and interleave a data stream of a layer A and a data stream of a layer B to a respective constellation in a signal space to produce a modulated signal of the layer A and a modulated signal of the layer B.

an inverse fast Fourier transformer operable to convert the modulated signal of the layer A into a transmission signal on a time axis in the layer A and to convert the modulated signal of the layer B into a transmission signal on a time axis in the layer B, wherein each transmission signal comprises an effective symbol signal and a guard interval signal, and a period of the guard interval signal in the layer A is larger than a period of the guard interval signal in the layer B, and

a transmitter operable to transmit the transmission signals; and  
a signal receiving apparatus including

a receiver operable to receive the transmission signal in the layer A and the transmission signal in the layer B,

a fast-Fourier transformer operable to convert the transmission signal in the layer A into a converted signal on a frequency axis in the layer A and to convert the transmission signal in the layer B into a converted signal on a frequency axis in the layer B, and

a demodulator operable to de-interleave the transmission signals, demodulate the converted signal in the layer A into a data stream of the layer A and to demodulate the converted signal in the layer B into a data stream of the layer B.

9. A signal transmission method comprising:

assigning and interleaving a data stream of a layer A and a data stream of a layer B to a respective constellation in a signal space to produce a modulated signal of the layer A and a modulated signal of the layer B;

inverse fast Fourier transforming the modulated signal of the layer A into a transmission signal on a time axis in the layer A and inverse fast Fourier transforming the modulated signal of the layer B into a transmission signal on a time axis in the layer B, wherein each transmission signal comprises an effective symbol signal and a guard interval signal, and a period of the guard interval signal in the layer A is larger than a period of the guard interval signal in the layer B; and

transmitting the transmission signals.

10. A signal receiving method for use in receiving a modulation signal in a layer A and a modulation signal in a layer B, wherein the modulation signals each include a guard interval signal, and a period of the guard interval signal in the layer A is larger than a period of the guard interval signal in the layer B, said method comprising:

fast-Fourier transforming the modulation signal in the layer A into a converted signal on a frequency axis in the layer A and fast-Fourier transforming the modulation signal in the layer B into a converted signal on a frequency axis in the layer B; and

de-interleaving the modulation signals, demodulating the converted signal in the layer A into a data stream of the layer A and demodulating the converted signal in the layer B into a data stream of the layer B. --

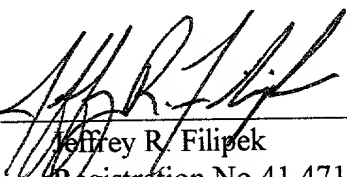
### REMARKS

By this preliminary amendment, claims 1-5 have been canceled and claims 6-10 added. Thus, claims 6-10 are active. Support for this amendment is found in the specification at least at: column 72, lines 39-47.

As indicated in the above amendment to the specification, this application is a reissue application of U.S. Patent No. 5,802,241, and a divisional application of reissue application No. 09/653,482, which is also a reissue application of U.S. Patent No. 5,802,241. Further, it is the Patentees' intention to file further divisional reissue applications of U.S. Patent No. 5,802,241. When all such applications are filed and serial numbers are assigned thereto, the specifications of each of the applications will be amended to cross reference each of the other applications.

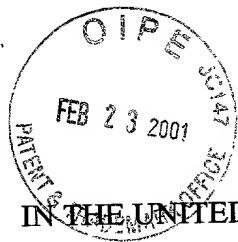
Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

: Attn: BOX REISSUE

Mitsuaki OSHIMA

: Docket No. 2000\_1727

Serial No. 09/740,068

: RECEIVED

Filed December 20, 2000

: MAR 7 2001

COMMUNICATION SYSTEM

: Technology Center 2600

RECEIVED  
MAR 1 2001  
TC 2600 MAILROOM

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents,  
Washington, D.C.

Sir:

Please amend the above-identified application as follows.

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MAR -2 2001  
TC 1700 MAIL ROOM

IN THE SPECIFICATION:

Before the heading "BACKGROUND OF THE INVENTION" at page 4, please add  
the following paragraph:

A further reissue divisional application has been filed, which is a reissue of Patent No. 5,802,241 and a divisional application of reissue application 09/653,482. The further reissue divisional application is: 09/698,367, filed October 30, 2000.

09740068-122000

AP

**REMARKS**

It is requested that the above amendments be entered prior to examination. This Preliminary Amendment is effective to provide a statement that more than one reissue application of Patent No. 5,802,241 has been filed and to identify each of the reissue applications by relationship, application number, and filing date.

Respectfully submitted,

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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**REQUEST TO TRANSFER FORMAL DRAWINGS FROM PATENT FILE**

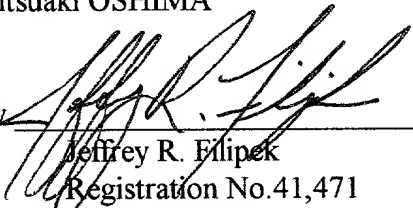
Assistant Commissioner for Patents  
Washington, DC 20231

Sir:

It hereby is requested that the formal drawings from the original file of the above patent be transferred to the present reissue application.

Respectfully submitted,

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